ORDER NO. AD8906183C8

Service Manual

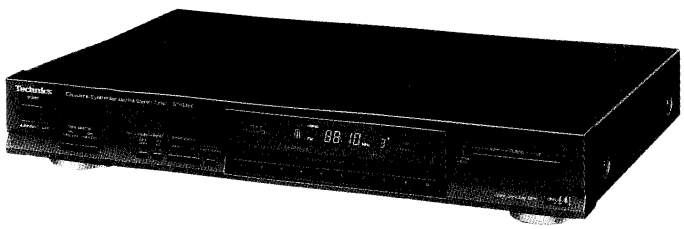
Tuner

QUARTZ Synthesizer
AM/FM Stereo Tuner

ST-G460

Color

(K)...Black Type



Area

Country Code	Area	Color
(EG)	F.R. Germany	(K)
(Ei)	Italy	(K)
(G)	Third Region	(K)
(GN)	Oceania	(K)
(PX)	Far East-PX and Europe PX	(K)

SPECIFICATIONS

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz
	87.525~108.00 MHz (+25 kHz shift)
Sensitivity	1.5 μV (IHF, usable)
S/N 30 dB	1.3 μV (75 Ω)
S/N 26 dB	1.2 μV (75 Ω)
S/N 20 dB	0.9 μV (75 Ω)
IHF 46 dB stereo quieting sensitivity	28 μV/75 Ω
Total harmonic distortion	
MONO (normal)	0.05 %
STEREO (normal)	0.1 %
S/N	
MONO	72 dB (80 dB, IHF)
STEREO	65dB (73 dB, IHF)
Frequency response	4 Hz~15 kHz, +0.5 dB~−1.0 dB
Alternate channel selectivity	
±400 kHz	65 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	90 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	55 dB
Stereo separation	
1 kHz	50 dB
10 kHz	40 dB
Carrier leak	
19 kHz	−55 dB (−60 dB, IHF)
38 kHz	−40 dB (−45 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.0 dB
Limiting point	0.85 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75 Ω (unbalanced)

■ AM TUNER SECTION

Frequency range

(For Europe and Australia)
522 kHz~1611 kHz (9 kHz-steps)
530 kHz~1620 kHz (10 kHz-steps)

(For Saudi Arabia and others)
531 kHz~1602 kHz (9 kHz-steps)
530 kHz~1600 kHz (10 kHz-steps)

Sensitivity (S/N 20 dB)	20 μV, 300 μV/m
Selectivity (±9 kHz)	50 dB
Image rejection	40 dB
IF rejection	60 dB

■ GENERAL

Output voltage	0.3 V (0.6V IHF)
Power consumption	9 W
Power supply	
For Oceania	AC 50 Hz/60 Hz, 240V
For continental Europe	AC 50 Hz/60 Hz, 220V
For others	AC 50 Hz/60 Hz, 110V/127V/220V/240V
Dimensions (W × H × D)	430 × 69 × 288 mm
	(16-15/16″ × 2-23/32″ × 11-11/32″)
Weight	2.5 kg (5.5 lb.)

Technics

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Central P.O. Box 288, Osaka 530-91, Japan

Panasonic Tokyo Sales Department
Matsushita Electric Industrial Co., Ltd.
World Trade Center Bldg., 4-1, Hamamatsu-cho,
2-chome, Minato-ku, Tokyo 105, Japan

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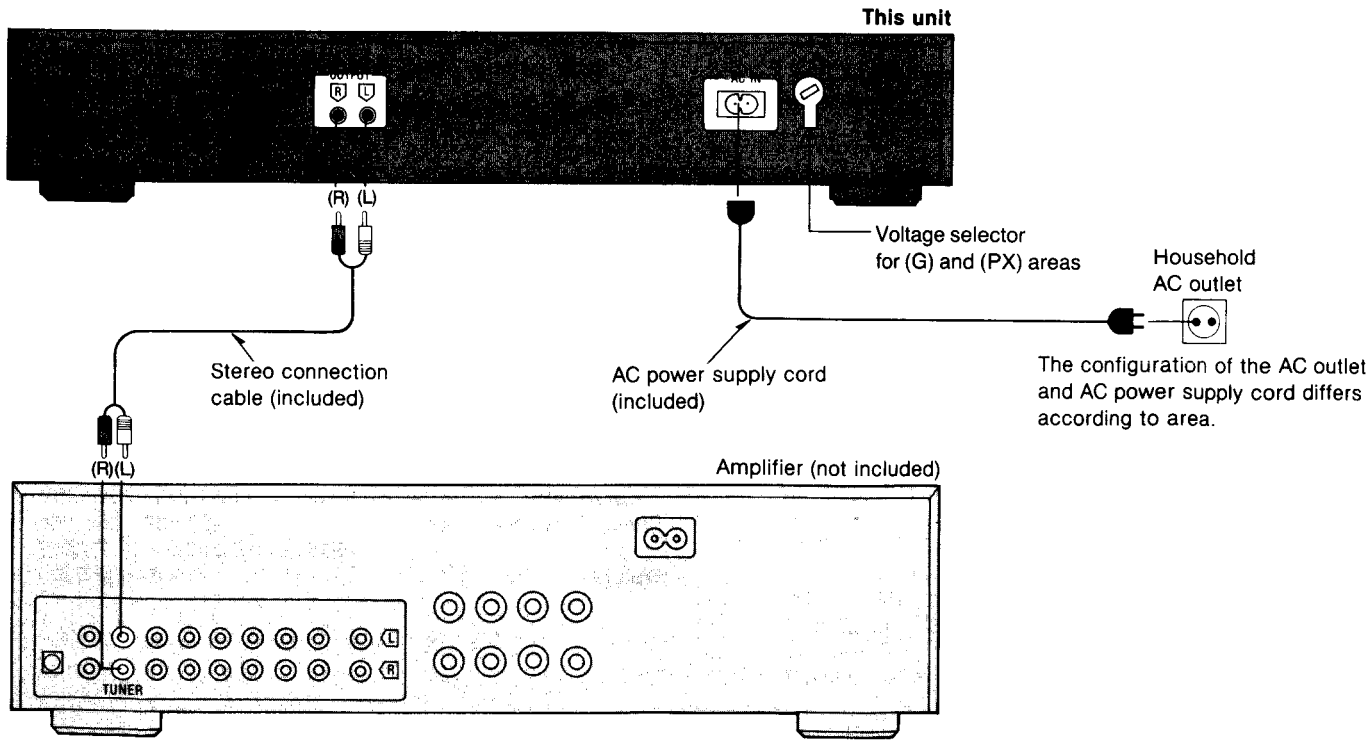
■ ACCESSORIES

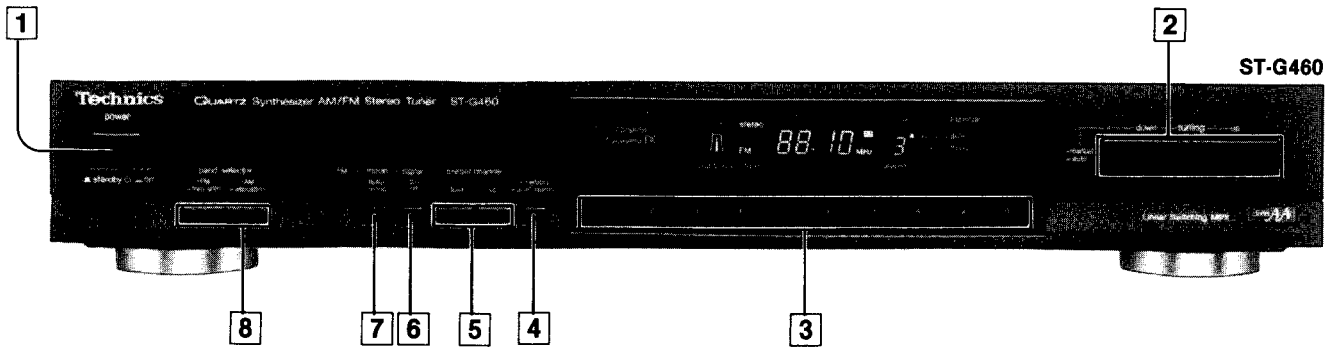
- Stereo connection cable (SJP2276) 1
- FM indoor antenna 1
  (SSA270M) ..... For (EG) and (Ei) areas
  (SSA269M) ..... For (G), (PX) and (GC) areas
- AM loop antenna (SPB1162T) 1
- AM antenna holders (SMA233-1M) 1
  (SMA231M) 1
- Screws (XTB3+10AFZ) 2
- AC plug adaptor (SJP9215) For (G) and (PX) areas 1
- AC power supply cord 1
  (SFDAC05E3) ..... For (EG) and (Ei) areas
  (RJA0004) ..... For (G) and (PX) areas
  (SJA173) ..... For (GN) area

■ CONNECTIONS



■ LOCATION OF CONTROLS

Control section



1 Power "standby ⏻/on" switch (power "standby ⏻/on")

2 Tuning buttons (tuning)

3 Preset-tuning buttons (1 – 0) (39 channel random preset tuning)

4 Memory button (memory)

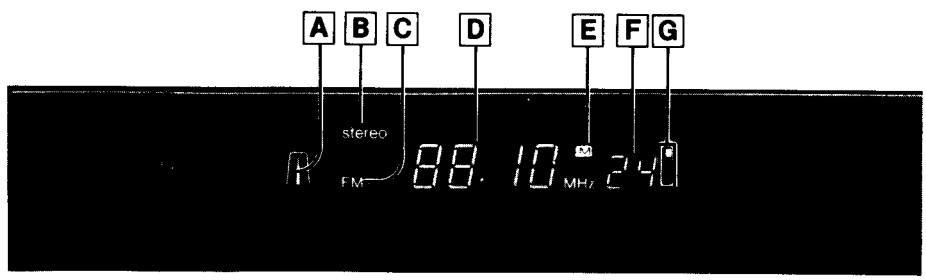
5 Preset channel buttons (preset channel)

6 FM signal-strength indication button (FM-signal)

7 FM mode selector (FM-mode)

8 Band selectors (band selector)

Display section



A Quartz-lock indicator (|)

B FM stereo indicator (stereo)

C Band indicator (band)

D Digital frequency display

E Memory indicator (M)

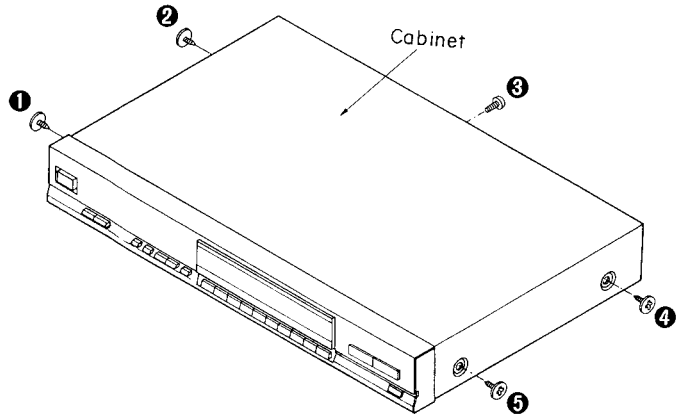
F Channel display (channel)

G FM mode indicator (FM mode)

※The operating procedures and features are similar to those for and of the ST-G450.

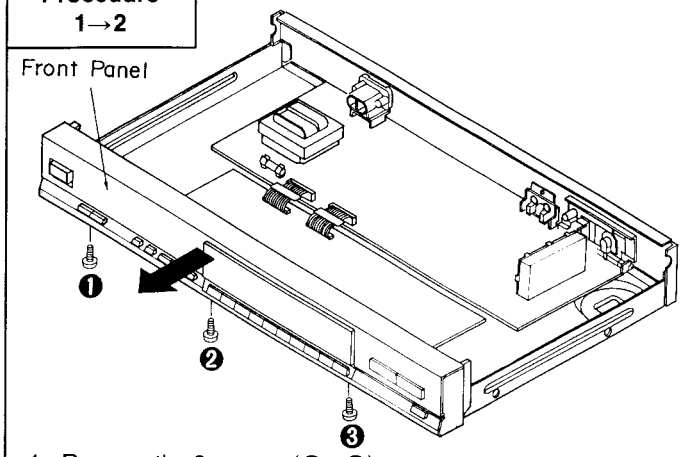
■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	Removal of the cabinet
Procedure 1	



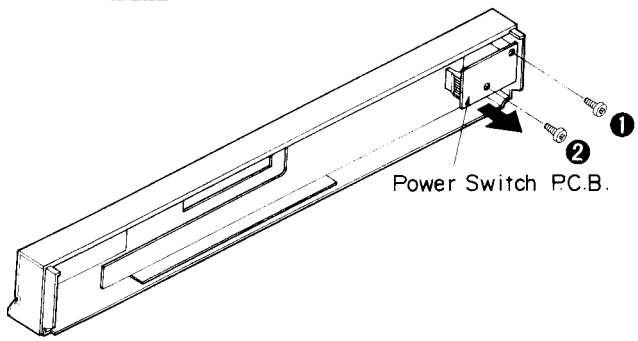
●Remove the 5 screws (❶~❺).

Ref. No. 2	Removal of the front panel
Procedure 1→2	



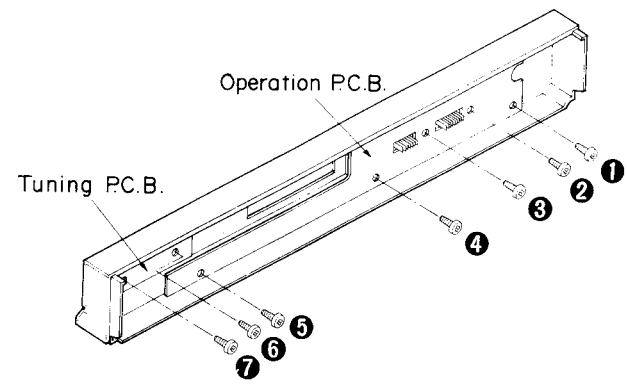
1. Remove the 3 screws (❶~❸).
2. Remove the front panel in the direction of the arrow.

Ref. No. 3	Removal of the power switch P.C.B.
Procedure 1→2→3	



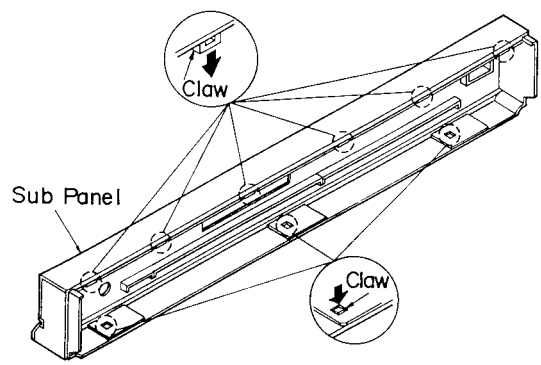
1. Remove the 2 screws (❶, ❷).
2. Remove the power switch P.C.B. in the direction of the arrow.

Ref. No. 4	Removal of the operation P.C.B. and tuning P.C.B.
Procedure 1→2→3→4	

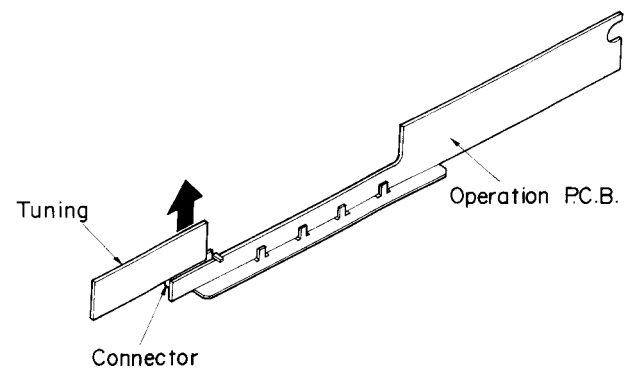


1. Remove the 7 screws (❶~❼).

Ref. No. 5	Removal of the sub panel
Procedure 1→2→3→4→5	

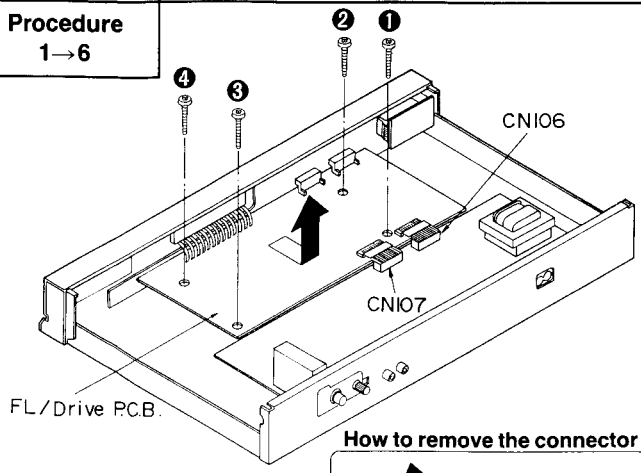


●Remove the 9 claws (❶~❾).

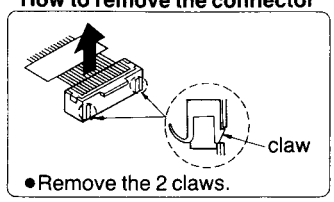


2. Remove the tuning P.C.B. in the direction of the arrow.

Ref. No. 6	Removal of the FL Drive P.C.B.
Procedure 1→6	



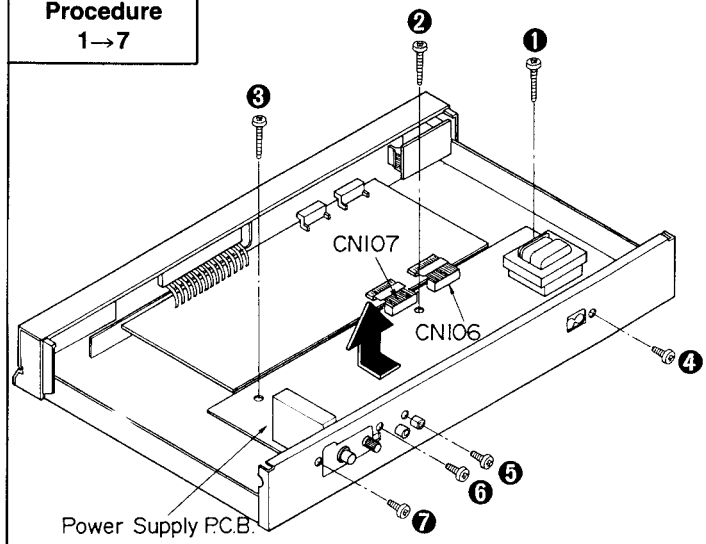
How to remove the connector



●Remove the 2 claws.

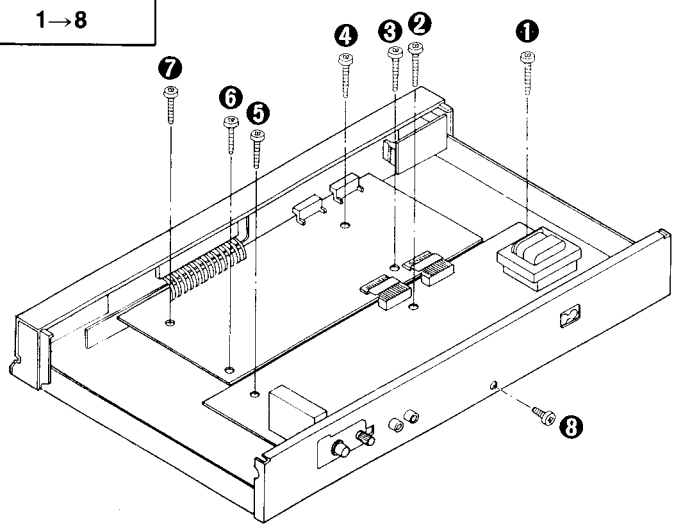
1. Remove the 4 screws (❶~❹).
2. Remove the 2 connectors (CN106, CN107).
3. Remove the FL drive P.C.B. in the direction of the arrow.

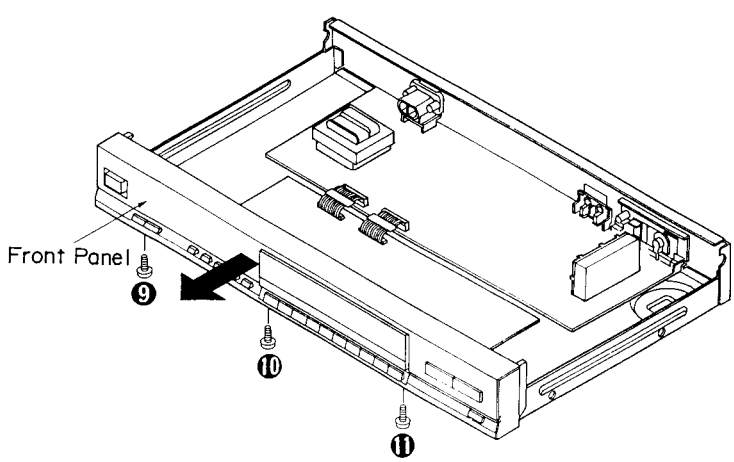
Ref. No. 7	Removal of the power supply P.C.B.
Procedure 1→7	



1. Remove the 7 screws (❶~❼).
2. Remove the 2 connectors (CN106, CN107).
3. Remove the power supply P.C.B. in the direction of the arrow.

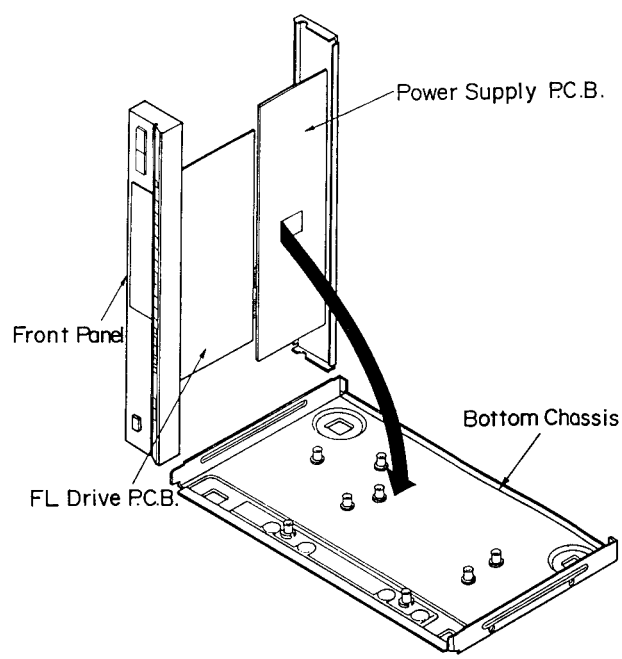
Ref. No. 8	Checking of the FL drive P.C.B. and power supply P.C.B.
Procedure 1→8	





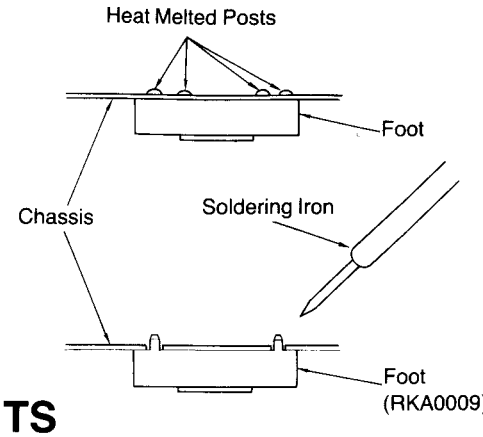
●When checking the soldered surfaces of main P.C.B. and replacing the parts, do as show.

1. Remove the 11 screws (❶~⓫).
2. Pull out the front panel in the direction of the arrow Ⓐ.
3. Remove the bottom chassis in the direction of the arrow Ⓑ.
4. Reinstall the front panel to the FL drive P.C.B.



•Replacement of the Foot.

1. Remove the 4 heat melted posts on the chassis with a pair of nippers or similar tool.
2. To replace the foot (RKA0009) on the chassis, melt the 4 posts with a soldering iron.



■ MEASUREMENTS AND ADJUSTMENTS

■ FM

Control positions and equipment used

- FM signal generator (FM-SG)
- Stereo modulator
- Distortion analyser
- Oscilloscope
- Frequency counter
- Choke coil (100μH)
- Resistor(100kΩ)
- Ceramic capacitor(200pF)
- AC and DC electronic voltmeter(EVM)

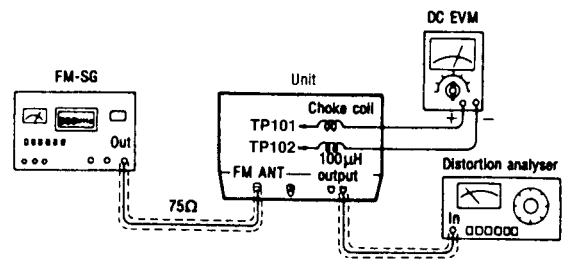
Note: For **Z201**, **Z202**, **L301**, **L303** and **L304**, they are supplied as adjusted parts. So, do not turn the cores of the parts. It is not necessary to adjust the AM circuit.

FM MONO DISTORTION ADJUSTMENT

1.Test equipment connection is shown in figure.
2.Set the unit to **"FM"** mode.
3.Set the radio frequency display and signal generator to **100.10MHz**.
4.Adjust the core of **T101** so that the voltage measured in signal mode is **0mV (0±20 mV)** in 300 mV range.
5.Adjust **T102** so that the distortion factor of L-CH is minimized.
6.Repeat steps 4 and 5.
7.Make sure that the distortion factors of L-CH and R-CH are nearly the same and minimum.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency 1kHz
Output level 66dB



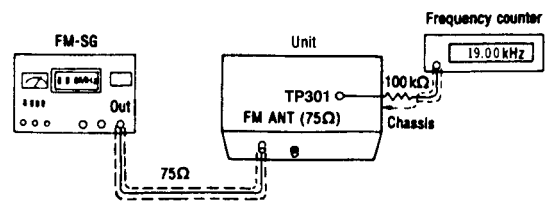
MPX VCO ADJUSTMENT

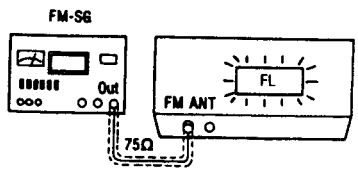
1.Test equipment connection is shown in figure.
2.Set the unit to **"on/auto"** position.
3.Set the radio frequency display and signal genarator to **100.10MHz.**
4.Adjust **VR302** for **19kHz±30Hz** on frequency counter reading.

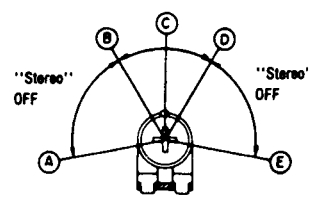
•USING ALTERNATE SYSTEM

1.Apply stereo signal from generator or receive the stereo broadcast.
2.Adjust **VR302** until stereo indicator lights up. Fix the arm of **VR302** as shown in figure.

FM SIGNAL GENERATOR CONDITION
Modulation 0%
Modulation frequency 0
Output level 66dB







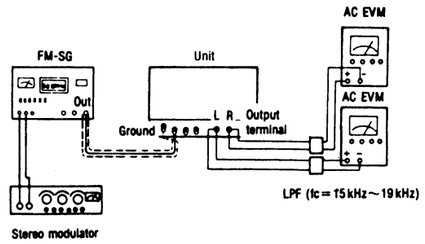
VR302

Ⓐ−Ⓑ,
Ⓓ−Ⓔ..... **"Stereo" OFF position**
Ⓑ−Ⓓ..... **"Stereo" ON position (Indicator lighting)**
Ⓒ..... **Adjust point of pilot circuit**

SEPARATION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to **"FM"** mode.
3. Set the radio frequency display and signal generator to **100.10MHz**.
4. Adjust **VR301** so that the R-CH output is minimized when stereo modulator is in "L"(L-CH modulation) mode.

FM SIGNAL GENERATOR CONDITION
Modulation.....Stereo "L" mode or "R" mode 45%, Pilot 10%
Modulation frequency .....1kHz(Pilot 19kHz)
Output level 66dB

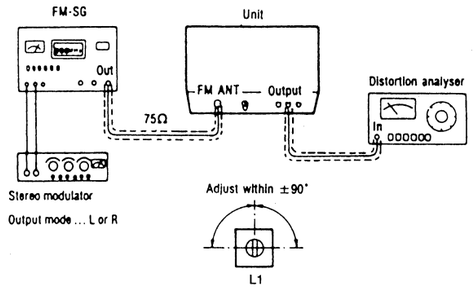


FM STEREO DISTORTION ADJUSTMENT (EG, EI only)

1. Test equipment connection is shown in figure.
2. Set the unit to "**FM**" mode.
3. Set the radio frequency display and signal generator to **100.10MHz**.
4. Adjust **L1** so that the distortion factor of L-CH is minimized.
5. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.

Notes:
1. The adjusting screwdriver used should be made of resin.
2. **L1** should be rotated no more 1/4 turn (90 deg.) on either side.

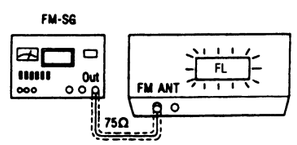
FM SIGNAL GENERATOR CONDITION
Modulation.....Stereo "L" mode or "R" mode 45%, Pilot 10%
Modulation frequency.....1kHz (Pilot 19kHz)
Output level.....66dB



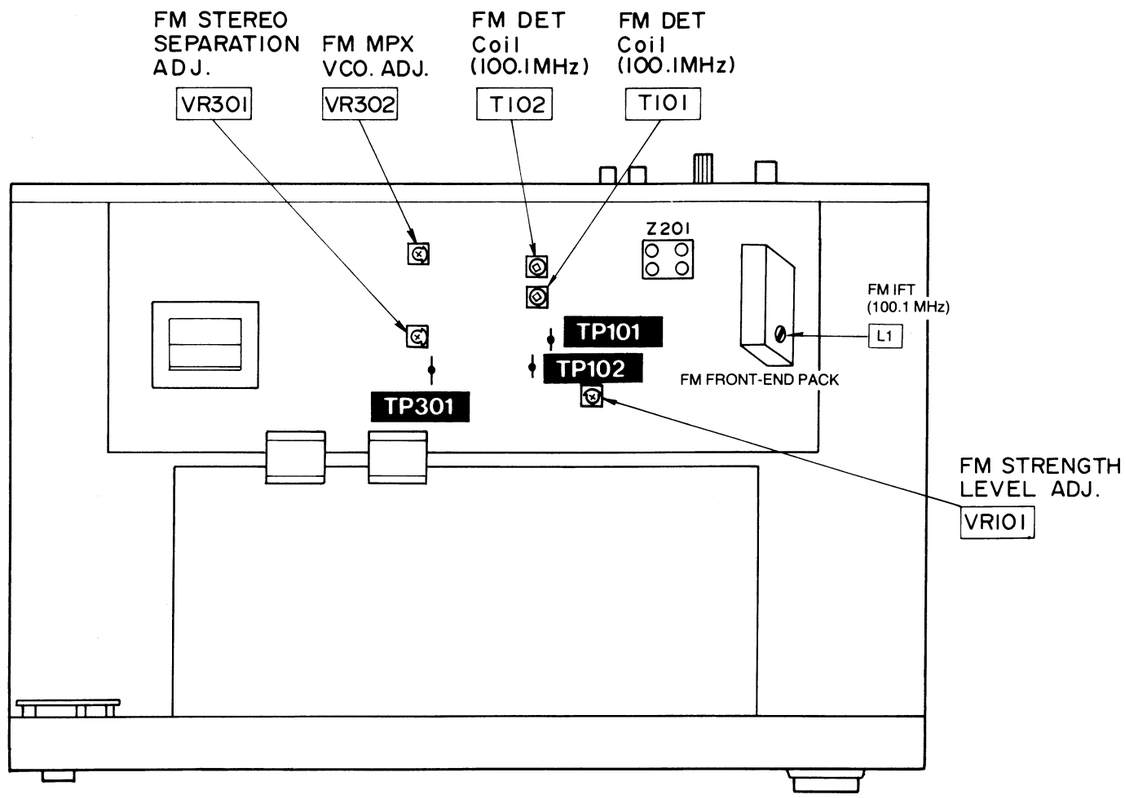
FM SIGNAL STRENGTH LEVEL ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "**FM and IF normal**" mode.
3. Set the radio frequency display and signal generator to **100.10MHz**.
4. Change FL display from "frequency" to "dB" by pressing the FM signal button.
5. Adjust **VR101** so that **54dB** is indicated. "**54dB**" is indicated on the FL display.
6. Repeat steps 4, 5.

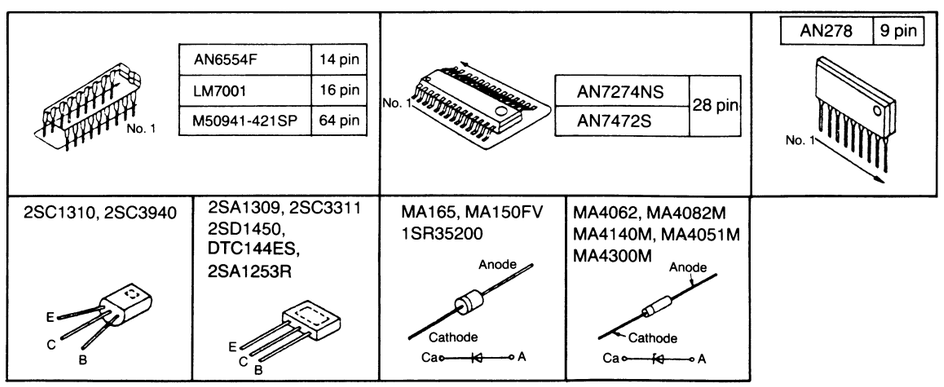
FM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency.....1kHz
Output level.....60dB



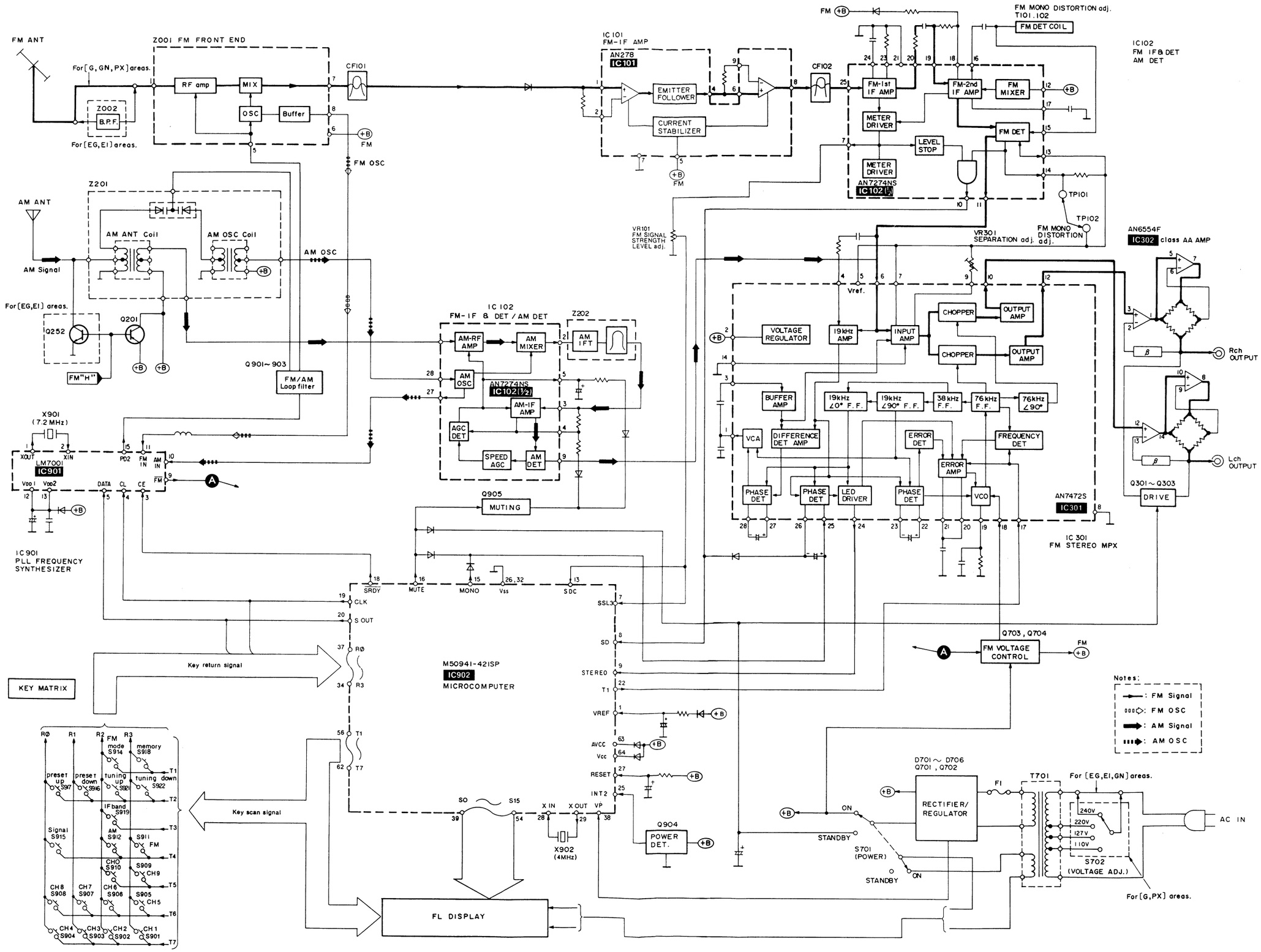
●Adjustment points.

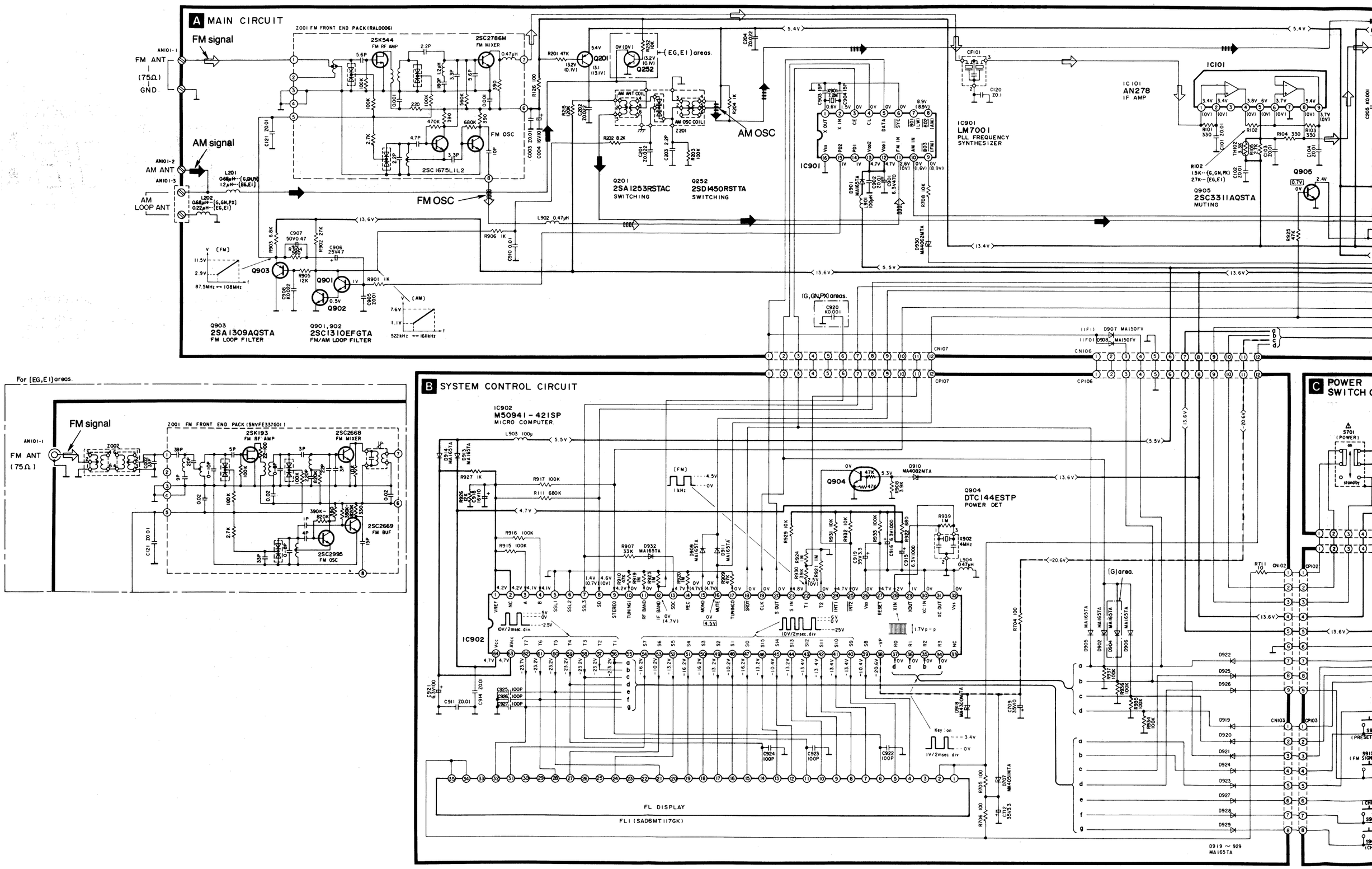


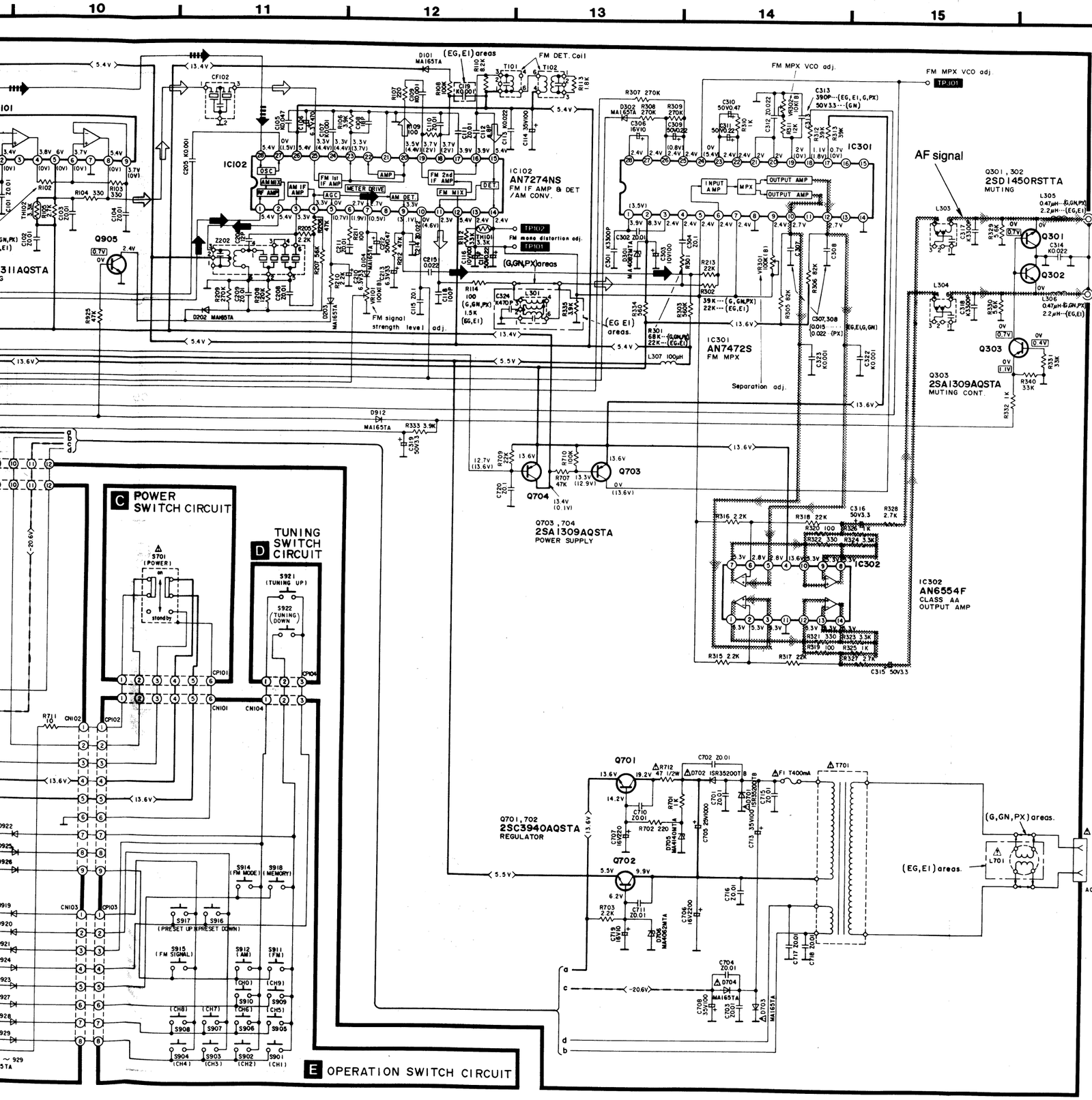
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



■ BLOCK DIAGRAM




A MAIN CIRCUIT
Z001 FM FRONT END PACK (RAL0006)
FM signal
AM signal
FM ANT (75Ω) GND
AM ANT
AM LOOP ANT
2SK544 FM RF AMP
2SC2786M FM MIXER
2SC1675L1L2
FM OSC
AM OSC
Q201 2SA1253RSTAC SWITCHING
Q252 2SD1450RSTTA SWITCHING
Q903 2SA1309AQSTA FM LOOP FILTER
Q901,902 2SC1310EFGTA FM/AM LOOP FILTER
IC901 LM7001 PLL FREQUENCY SYNTHESIZER
IC101 AN278 IF AMP
Q905 2SC3311AQSTA MUTING
(EG,EI) areas.
(G,GN,PX) areas.
B SYSTEM CONTROL CIRCUIT
IC902 M50941-421SP MICRO COMPUTER
Q904 DTC144ESTP POWER DET
FL DISPLAY
FL1 (SAD6MT117GK)
C POWER SWITCH
For (EG,E1) areas.
FM signal
FM ANT (75Ω)
Z001 FM FRONT END PACK (SNVFE337G01)
2SK193 FM RF AMP
2SC2668 FM MIXER
2SC2995 FM OSC
2SC2669 FM BUF



■ SCHEMATIC DIAGRAM

(Parts list on page 19, 20, 22, 23)

(This schematic diagram may be modified at any time with the development of new technology.)

Note 1:

- **S701:** Power switch.
- **S702:** Voltage selector switch for (G) and (PX) areas
- **S901~S910:** Preset tuning switches.
  S901: CH1, S902: CH2, S903: CH3, S904: CH4, S905: CH5, S906: CH6, S907: CH7, S908: CH8, S909: CH9, S910: CH0
- **S911, S912:** Band selector switches.
  S911: FM, S912: AM
- **S914:** FM mode selector switch.
- **S915:** FM signal ON/OFF switch.
- **S916, S917:** Preset channel switches.
  S916: DOWN, S917: UP
- **S918:** Memory switch.
- **S921, S922:** Tuning switches.
  S921: UP, S922: DOWN

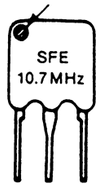
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester. ( ): AM voltage
- ——— Positive voltage lines
  □□□□▷ FM OSC
  ■■■■▶ AM OSC
  ⋯⋯ AF signal lines
  ⇨ FM signal
  ➡ AM signal
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

Note 2:

• Use of ceramic filters in pairs

The ceramic filters (CF101, CF102) for FM-IF circuit are available in three ranks. For this circuit, be sure to use the ceramics of the same rank in a pair. At repairing and replacement, pay close attention to the diodes (D907, D908) for use as different diodes must be used depending on each rank of the ceramic filters.

Color marking
(Red, Black or White)



RANK (Color)	D907	D908	CENTER FREQUENCY
Orange	○	○	10.72 MHz
Red	×	×	10.70 MHz
Blue	×	○	10.67 MHz

Note: ○ mark: Diode is used.
× mark: Diode is not used.

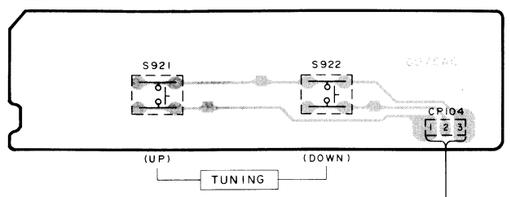
✱ Caution!

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
✱ Cover the parts boxes made of plastics with aluminum coil.
✱ Ground the soldering iron.
✱ Put a conductive mat on the work table.
✱ Do not touch the legs of IC or LSI with the fingers directly.

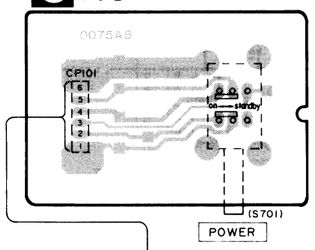
1 2 3 4 5 6 7 8 9 10

A B C D E F

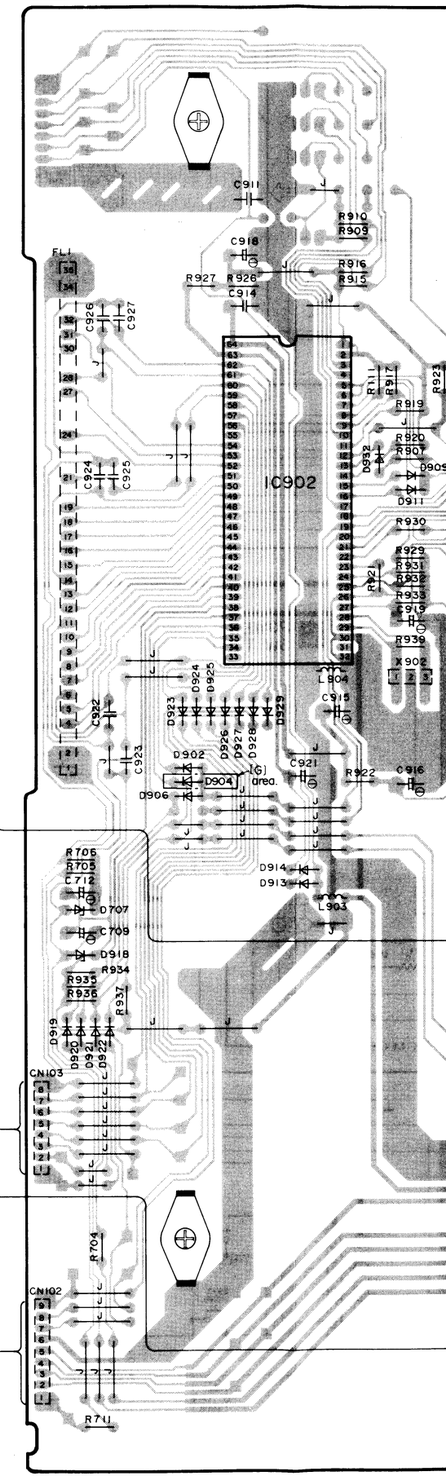
D TUNING SWITCH P.C.B.



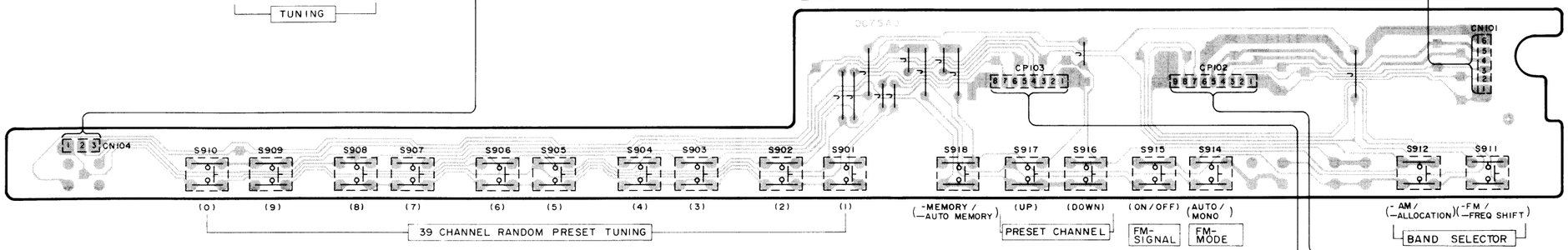
C POWER SWITCH P.C.B.



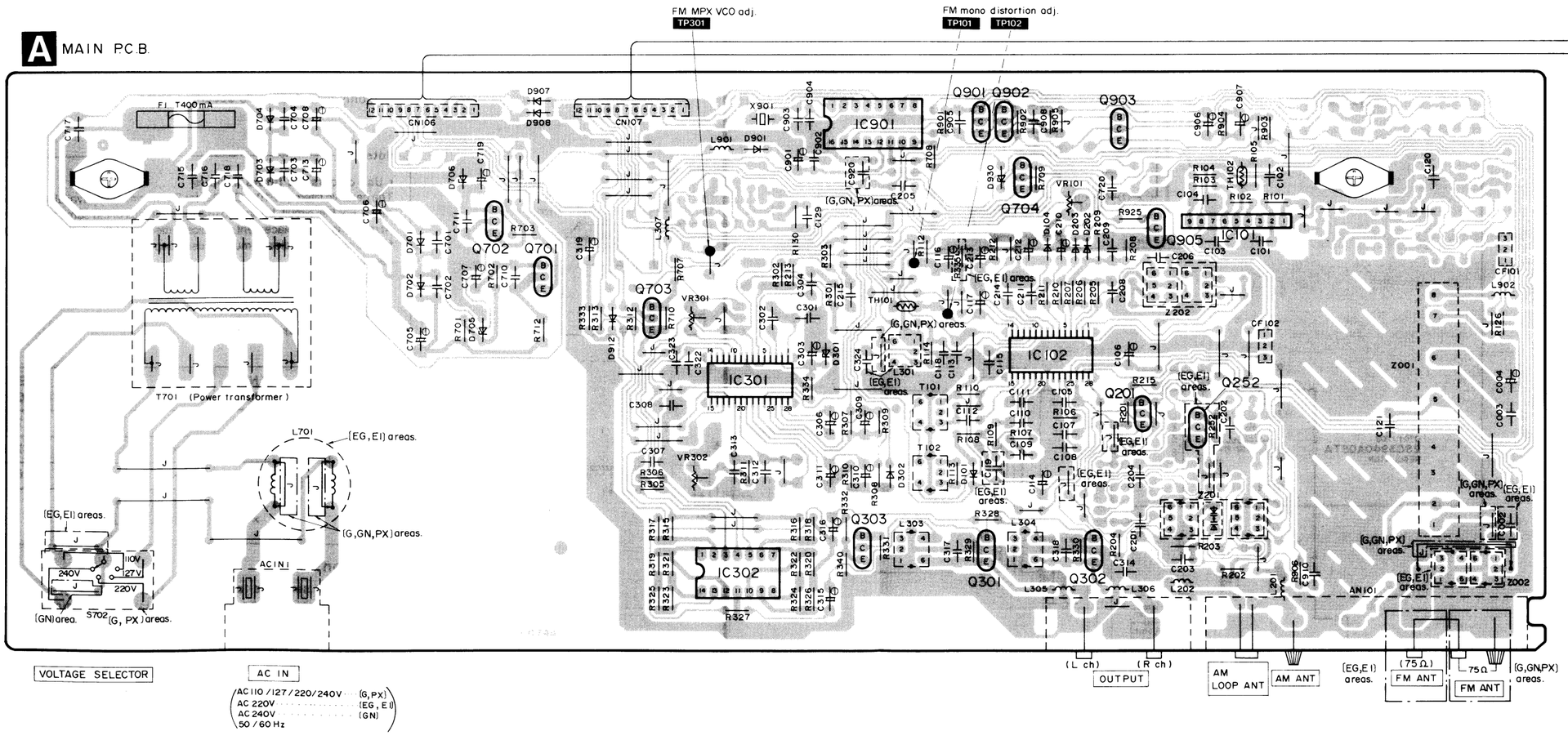
B SYSTEM CONTROL P.C.B.



E OPERATION SWITCH P.C.B.

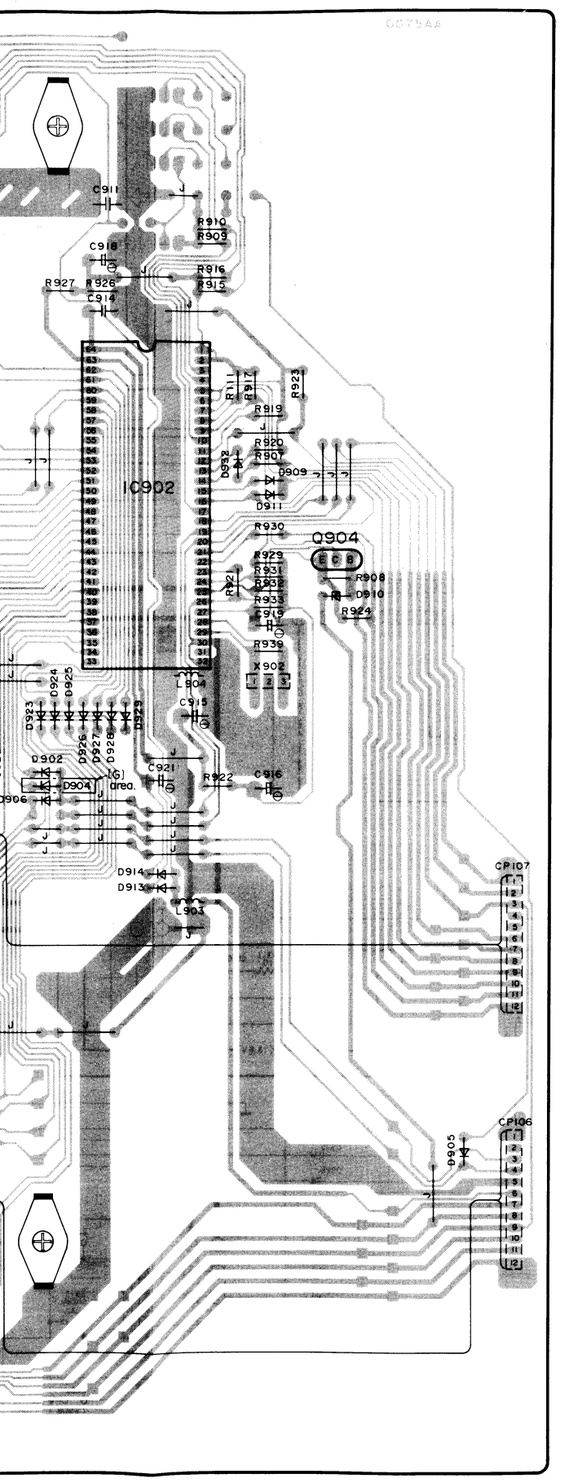


A MAIN P.C.B.



10 11

M CONTROL P.C.B.

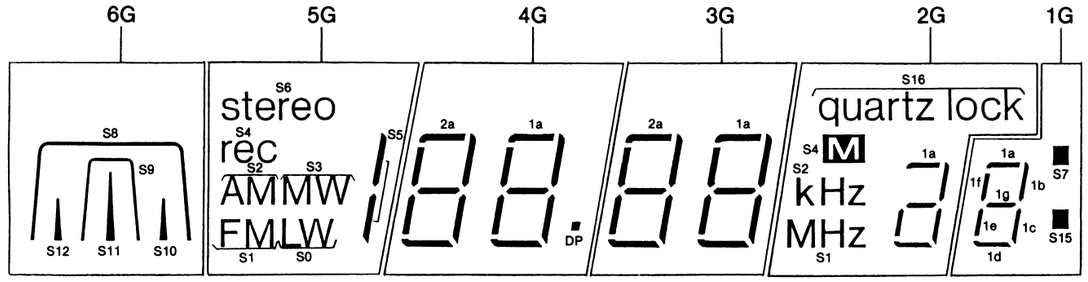


■ FUNCTIONS OF IC TERMINALS (IC902: M50941-421SP)

PIN NO.	IN/OUT	MARK	DESCRIPTION OF TERMINAL
1	INPUT	VREF	Reference voltage terminal.
2	——	NC	Not used in this unit.
3	——	A	Not used in this unit, connected to GND.
4		B	
5 • 6	——	SSL1 • SSL2	
7	INPUT	SSL3	FM signal level detector terminal.
8	INPUT	SD	Station detection of auto tuning terminal. • Received: "H", No signal: "L"
9	INPUT	STEREO	Reference voltage terminal.
10 • 17	——	TUNING 0 • TUNING 1	Not used in this unit.
11	——	RF BAND	Not used in this unit.
12	OUTPUT	IF BAND	FM IF BAND selector terminal. • "normal": "L", "super narrow": "H"
13	——	NC	Not used in this unit.
14	——	REC	Not used in this unit.
15	OUTPUT	MONO	Forcible monaural selection terminal. 4.8V / 0 — Forcible monaural mode
16	OUTPUT	MUTE	Terminal to eliminate shock noise due to unlocking at PLL. 〈Muting output〉 • Pin 25 (CE) is "L"→"H" or "H"→"L" • Power switch "off". • Frequency change. (up/down, FM↔AM (MW/LW), REC). • FM RF/IF selection.
18	OUTPUT	$\overline{SRDY}$	PLL data output terminal. $\overline{SRDY}$: serial I/O enable signal, CLK: clock signal, SOUT: serial data signal.
19		CLK	
20		SOUT	
21	INPUT	SIN	Control input terminal.
22	OUTPUT	T1	Clock pulse waveform output terminal. • FM: 1kHz signal (duty 50%)
23	——	T2	Not used in this unit.
24	INPUT	$\overline{INT1}$	Remote control input terminal. Not used in this unit.
25	INPUT	$\overline{INT2}$	Power supply detection terminal.
26 • 32	——	Vss	Ground terminal.
27	INPUT	RESET	Reset signal terminal.
28	INPUT	XIN	Connecting terminal for crystal oscillator.
29	OUTPUT	XOUT	
30	——	XCIN	Not used in this unit, connected to GND.
31	——	XCOUT	Not used in this unit.
33	——	NC	
34 ∫ 37	INPUT	R0 ∫ R3	Terminal for key return signal to external key matrix. 3.6V / 0 — 1V/2msec. div.
38	INPUT	VP	Power supply terminal for FL display.
39 ∫ 54	OUTPUT	S0 ∫ S15	Segment signal terminal for FL display. 5V / 0V / −26.0V — 10V/5msec. div.
55	——	NC	Not used in this unit.
56 ∫ 62	OUTPUT	T1 ∫ T7	Terminal for key scan signal to external key matrix and grid signal terminal for FL display. 5V / 0V / −26.0V — 10V/2msec. div.
63	INPUT	AVcc	Power supply terminal of device.
64	INPUT	Vcc	

■ DESCRIPTION OF FL PANEL

• GRID ASSIGNMENT



• PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
CONNECTION	F1	F1	NP	S8	S9	6G	S10	S11	S12	S13	5G	S14	S15	4G	S0	S1	S2	S3	S4	NP	3G	NP	NP	NP	S5	NP	NP	S6	2G	NP	S16	S7	1G	NP	F2	F2

• ANODE CONNECTION

	6G	5G	4G	3G	2G	1G
S0	-	LW	2d	2d	-	-
S1	-	FM	2e	2e	MHz	-
S2	-	AM	2c	2c	kHz	-
S3	-	MW	2g	2g	-	-
S4	-	rec	2f	2f	M	-
S5	-	/	2b	2b	-	-
S6	-	stereo	2a	2a	-	-
S7	-	-	-	-	-	■
S8	⏢	-	1d	1d	1d	1d
S9	⏢	-	1e	1e	1e	1e
S10	▏	-	1c	1c	1c	1c
S11	▏	-	1g	1g	1g	1g
S12	▏	-	1f	1f	-	1f
S13	-	-	1b	1b	1b	1b
S14	-	-	1a	1a	1a	1a
S15	-	-	DP	-	-	■
S16	-	-	-	-	quartz lock	-

■ REPLACEMENT PARTS LIST

Notes: •Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
•The parenthesized indications in the Remarks columns specify the areas. (Refer to the first page for area.)
Parts without these indications can be used for all areas.
•[F]: Indicates parts that are supplied by PFS. (Panasonic France S.A. Longwy division).

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUITS	
IC101	AN278	IC, BUFFER AMP	
IC102	AN7274NS	IC, FM IF AMP	
IC301	AN7472S	IC, FM MPX	
IC302	AN6554F	IC, CLASS AA OUTPUT AMP	
IC901	LM7001	IC, PLL FREQUENCY SYNTHE	
IC902	M50941-421SP	IC, MICRO COMPUTER	
		TRANSISTORS	
Q201	2SA1253RSTAC	TRANSISTOR	
Q252	2SD1450RSTTA	TRANSISTOR	(EG, EI)
Q301, 302	2SD1450RSTTA	TRANSISTOR	
Q303	2SA1309AQSTA	TRANSISTOR	
Q701, 702	2SC3940AQSTA	TRANSISTOR	
Q703, 704	2SA1309AQSTA	TRANSISTOR	
Q901, 902	2SC1310EFGTA	TRANSISTOR	
Q903	2SA1309AQSTA	TRANSISTOR	
Q904	DTC144ESTP	TRANSISTOR	
Q905	2SC3311AQSTA	TRANSISTOR	
		DIODES	
D101	MA165TA	DIODE	
D104	MA165TA	DIODE	
D202, 203	MA165TA	DIODE	
D301	MA4082MTA	DIODE	
D302	MA165TA	DIODE	
D701, 702	1SR35200TB	DIODE	⚠
D703, 704	MA165TA	DIODE	⚠
D705	MA4140MTA	DIODE	
D706	MA4062MTA	DIODE	
D707	MA4051MTA	DIODE	
D901, 902	MA165TA	DIODE	
D904	MA165TA	DIODE	(G)
D905, 906	MA165TA	DIODE	
D907, 908	MA150FV	DIODE	
D909	MA165TA	DIODE	
D910	MA4082MTA	DIODE	
D911-914	MA165TA	DIODE	
D918	MA4300MTA	DIODE	
D919-929	MA165TA	DIODE	
D930	MA4062MTA	DIODE	
D932	MA165TA	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
		VARIABLE RESISTORS	
VR101	EVNDXAA00B15	V. R, STRENGTH LEVEL ADJ.	
VR301	EVNDXAA00B15	V. R, STEREO SEPARATION ADJ.	
VR302	EVNDXAA00B14	V. R, FM MPX VCO ADJ.	
		THERMISTOR	
TH101, 102	ERTD2ZHL332T	THERMISTOR	
		COMPONENT COMBINATIONS	
Z001	SNVFE337G01	TUNER PACK	(EG, EI)
Z001	RAL0006	TUNER PACK	(G, GN, PX)
Z002	SLA4Z13-Z	COIL	(EG, EI)
Z201	SLA2Z1-T	COIL	
Z202	RLI2Z002-W	COMPONENT COMBINATION	
		COILS	
L201	ELEPK1R2MA	COIL	(EG, EI)
L201	ELEPKR68MA	COIL	(G, GN, PX)
L202	ELEPKR22MA	COIL	(EG, EI)
L202	ELEPKR68MA	COIL	(G, GN, PX)
L301	SLM1B10-M	COIL	(EG, EI)
L303, 304	SLM1B9-P	COIL	
L305, 306	RLQZP2R2KT-Y	COIL	(EG, EI)
L305, 306	RLQZPR47KT-Y	COIL	(G, GN, PX)
L307	RLQZP101KT-Y	COIL	
L701	SLQZ650MH49	COIL	⚠(EG, EI)
L901	RLQZP101KT-Y	COIL	
L902	RLQZPR47KT-Y	COIL	
L903	RLQZP101KT-Y	COIL	
L904	RLQZPR47KT-Y	COIL	
		FILTERS	
CF101	SVFE107MZ2-A	CERAMIC FILTER(RED)	(EG, EI)
CF101	SVFE107MZ2-B	CERAMIC FILTER(BLUE)	(EG, EI)
CF101	SVFE107MZ2-C	CERAMIC FILTER(ORANGE)	(EG, EI)
CF101	SVFE107MX2-A	CERAMIC FILTER(RED)	(G, GN, PX)
CF101	SVFE107MX2-B	CERAMIC FILTER(BLUE)	(G, GN, PX)
CF101	SVFE107MX2-C	CERAMIC FILTER(ORANGE)	(G, GN, PX)
CF102	SVFE107MX2-A	CERAMIC FILTER(RED)	(EG, EI)
CF102	SVFE107MX2-B	CERAMIC FILTER(BLUE)	(EG, EI)
CF102	SVFE107MX2-C	CERAMIC FILTER(ORANGE)	(EG, EI)
CF102	SVFE107ML-A	CERAMIC FILTER(RED)	(G, GN, PX)

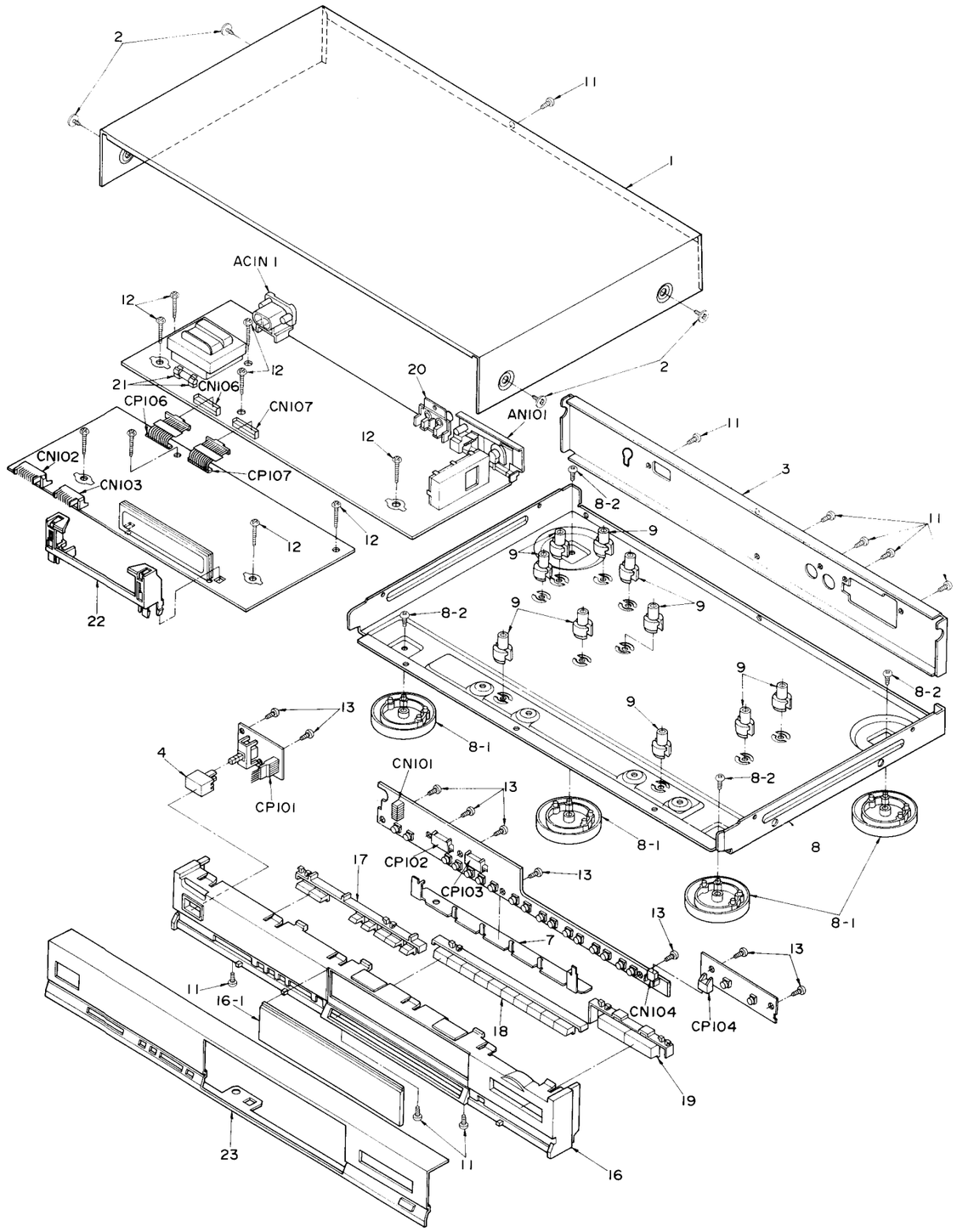
Ref. No.	Part No.	Part Name & Description	Remarks
CF102	SVFE107ML-B	CERAMIC FILTER(BLUE)	(G, GN, PX)
CF102	SVFE107ML-C	CERAMIC FILTER(ORANGE)	(G, GN, PX)
		TRANSFORMERS	
T101	RLI4B005-Z	TRANSFORMER	
T102	RLI4B006-Z	TRANSFORMER	
T701	SLT5K264-K	POWER TRANSFORMER	⚠
		OSCILLATORS	
X901	SVQ49U722T-S	OSCILLATOR	
X902	EFOGC4004T4	OSCILLATOR	
		SWITCHES	
S701	SSH1218	SW, POWER	⚠
S702	SSR187-1	SW, VOLTAGE SELECTOR	⚠ (G, PX)
S901-912	EVQQB005R	SW,	
S914-918	EVQQB005R	SW,	
S921, 922	EVQQB005R	SW,	

Ref. No.	Part No.	Part Name & Description	Remarks
		JACKS	
ACIN1	SJS9236	AC INLET	⚠ (EG, EI, G, PX)
ACIN1	SJSD16	AC INLET	⚠ (GN)
AN101	SJF8305N	ANT TERMINAL	(EG, EI)
AN101	SJF8402N	ANT TERMINAL	(G, GN, PX)
CN101	SJS50681BB	CONNECTOR (6P)	
CN102	RJU003K009M	CONNECTOR (9P)	
CN103	RJU003K008M	CONNECTOR (8P)	
CN104	SJS50382JQH	SOCKET (3P)	
CN106, 107	RJU005W012	CONNECTOR (12P)	
CP101	SJT30648BB	CONNECTOR (6P)	
CP102	RJT003K009M	CONNECTOR (9P)	
CP103	RJT003K008M	CONNECTOR (8P)	
CP104	SJT30345JQ	CONNECTOR (3P)	
CP106, 107	RJT005W012	CONNECTOR (12P)	
		FUSE	
F1	XBA2C04TB0	FUSE 250V T0.4A	⚠
		DISPLAY	
FL1	SAD6MT117GK	DISPLAY TUBE	

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RKM0032-K	CABINET	
2	SNE2129-1	SCREW	
3	RGR0018A-H	REAR CABINET	(EG)
3	RGR0056	REAR CABINET	(EI) F
3	RGR0018B-A	REAR CABINET	(G, PX)
3	RGR0018A-L	REAR CABINET	(GN)
4	RGU0030	POWER BUTTON	
7	RMA0074	HOLDER	
8	RXK0045	CHASSIS	
8-1	RKA0009-1	FOOT	
8-2	XTB3+6J	SCREW	
9	SHE187-2	HOLDER	
11	XTBS3+8JFZ1	SCREW	
12	XTB3+20JFZ	SCREW	
13	XTB3+8JFZ	SCREW	
16	RGK0090B-K	GRILL	
16-1	RKW0030	PANEL	
17	RGU0111-K	FUNCTION BUTTON	
18	RGU0112-K	PRESET BUTTON	
19	RGU0114-K	MODE BUTTON	
20	RJH3201N	TERMINAL BOARD	
21	SJT390	FUSE HOLDER	⚠
22	RMR0128	FL HOLDER	
23	RYP0121	FRONT PANEL	

Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIAL	
P1	RPG0141	CARTON BOX	(EG, EI, G, PX)
P1	RPG0147	CARTON BOX	(GN)
P2	SPSD152	ACCESSORY BOX	
P3	RPN0124	PAD	
P4	XZB60X60A01	PROTECTION COVER	
		ACCESSORIES	
A1	RQF0142	INSTRUCTIONS MANUAL	(EG)
A1	RQF0143	INSTRUCTIONS MANUAL	(EI) F
A1	RQF0144	INSTRUCTIONS MANUAL	(G, GN)
A1	RQF0258	INSTRUCTIONS MANUAL	(PX)
A2	SFDAC05E03	AC CORD	⚠ (EG, EI)
A2	RJA0004	AC CORD	⚠ (G, PX)
A2	SJA173	AC CORD	⚠ (GN)
A3	SJP2276	CORD	
A4	SPB1162T	AM LOOP ANTENNA	
A5	SMA233-1M	HOLDER	
A6	SMA231M	HOLDER	
A7	XTB3+10AFZ	SCREW	
A8	SSA270M	FM ANTENNA	(EG, EI)
A8	SSA269M	FM ANTENNA	(G, GN, PX)
A9	SJP9215	AC PLUG ADAPTOR	⚠ (G, PX)

■ EXPLODED VIEW (Parts list on page 20)



Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R101	ERDS2TJ331T	1/4W 330
R102	ERDS2TJ272T	1/4W 2.7K (EG, EI)
R102	ERDS2TJ152T	1/4W 1.5K (G, GN, PX)
R103, 104	ERDS2TJ331T	1/4W 330
R105	ERDS2TJ272T	1/4W 2.7K
R106	ERDS2TJ392T	1/4W 3.9K
R107	ERDS2TJ221T	1/4W 220
R108	ERDS2TJ104T	1/4W 100K
R109	ERDS2TJ101T	1/4W 100
R110	ERDS2TJ822T	1/4W 8.2K
R111	ERDS2TJ684T	1/4W 680K
R112	ERDS2TJ333T	1/4W 33K
R113	ERDS2TJ182T	1/4W 1.8K
R114	ERDS2TJ152T	1/4W 1.5K (EG, EI)
R114	ERDS2TJ101T	1/4W 100 (G, GN, PX)
R126	ERDS2TJ101T	1/4W 100
R201	ERDS2TJ473T	1/4W 47K
R202	ERDS2TJ822T	1/4W 8.2K
R203	ERDS2TJ104T	1/4W 100K
R204	ERDS2TJ102T	1/4W 1K
R205	ERDS2TJ222T	1/4W 2.2K
R206	ERDS2TJ473T	1/4W 47K
R207	ERDS2TJ563T	1/4W 56K
R208	ERDS2TJ124T	1/4W 120K
R209	ERDS2TJ274T	1/4W 270K
R210	ERDS2TJ222T	1/4W 2.2K
R211	ERDS2TJ101T	1/4W 100
R212	ERDS2TJ473T	1/4W 47K
R213	ERDS2TJ223T	1/4W 22K
R215	ERDS2TJ124T	1/4W 120K
R252	ERDS2TJ103T	1/4W 10K (EG, EI)
R301	ERDS2TJ223T	1/4W 22K (EG, EI)
R301	ERDS2TJ683T	1/4W 68K (G, GN, PX)
R302	ERDS2TJ223T	1/4W 22K (EG, EI)
R302	ERDS2TJ393T	1/4W 39K (G, GN, PX)
R303	ERDS2TJ564T	1/4W 560K
R305, 306	ERDS2TJ823T	1/4W 82K
R307-309	ERDS2TJ274T	1/4W 270K
R310	ERDS2TJ102T	1/4W 1K
R311	ERDS2TJ123T	1/4W 12K
R312, 313	ERDS2TJ393T	1/4W 39K
R315, 316	ERDS2TJ222T	1/4W 2.2K
R317, 318	ERDS2TJ223T	1/4W 22K
R319, 320	ERDS2TJ101T	1/4W 100
R321, 322	ERDS2TJ331T	1/4W 330
R323, 324	ERDS2TJ332T	1/4W 3.3K
R325, 326	ERDS2TJ102T	1/4W 1K
R327, 328	ERDS2TJ272T	1/4W 2.7K
R329, 330	ERDS2TJ562T	1/4W 5.6K
R331	ERDS2TJ333T	1/4W 33K
R332	ERDS2TJ102T	1/4W 1K
R333	ERDS2TJ392T	1/4W 3.9K
R334	ERDS2TJ561T	1/4W 560
R335	ERDS2TJ392T	1/4W 3.9K (EG, EI)
R340	ERDS2TJ333T	1/4W 33K
R701	ERDS2TJ102T	1/4W 1K
R702	ERDS2TJ221T	1/4W 220
R703	ERDS2TJ222T	1/4W 2.2K
R704-706	ERDS2TJ101T	1/4W 100
R707	ERDS2TJ473T	1/4W 47K
R708	ERDS2TJ103T	1/4W 10K
R709	ERDS2TJ223T	1/4W 22K
R710	ERDS2TJ104T	1/4W 100K
R711	ERDS2TJ100T	1/4W 10
R712	ERDS1FVJ470T	1/2W 47 ⚠
R901	ERDS2TJ102T	1/4W 1K
R902	ERDS2TJ273T	1/4W 27K
R903	ERDS2TJ682T	1/4W 6.8K
R904	ERDS2TJ561T	1/4W 560
R905	ERDS2TJ123T	1/4W 12K
R906	ERDS2TJ102T	1/4W 1K
R907	ERDS2TJ333T	1/4W 33K
R908	ERDS2TJ392T	1/4W 3.9K
R909, 910	ERDS2TJ473T	1/4W 47K
R915-917	ERDS2TJ104T	1/4W 100K
R919-921	ERDS2TJ105T	1/4W 1M
R922	ERDS2TJ681T	1/4W 680
R923, 924	ERDS2TJ105T	1/4W 1M
R925	ERDS2TJ473T	1/4W 47K
R926	ERDS2TJ123T	1/4W 12K
R927	ERDS2TJ102T	1/4W 1K
R929	ERDS2TJ103T	1/4W 10K
R930	ERDS2TJ393T	1/4W 39K
R931, 932	ERDS2TJ103T	1/4W 10K
R933-937	ERDS2TJ104T	1/4W 100K
R939	ERDS2TJ105T	1/4W 1M
		CAPACITORS
C002	ECCT1H330KC	50V 33P (EG, EI)
C003	ECKT1H103ZF	50V 0.01U
C004	ECEA1CK100B	16V 10U
C101-104	ECKT1H103ZF	50V 0.01U
C105	ECQM1H473KV3	50V 0.047U
C106	ECEA0JU471B	6.3V 470U
C107	ECQM1H102KV3	50V 1000P
C108	RCBS1H180JCY	50V 18P
C109	ECBT1H102KB5	50V 0.001U
C110, 111	ECKT1H103ZF	50V 0.01U
C112	RCBS1H6R8KCY	50V 6.8P
C113	ECQM1H223KV3	50V 0.022U
C114	ECEA1VU101B	35V 100U
C115	ECFR1E104ZFY	25V 0.1U
C116	ECEA1AU101B	10V 100U
C117	ECEA1HKR22B	50V 0.22U
C118	RCBS1H101KBY	50V 100P
C119	ECBT1H102KB5	50V 0.001U (EG, EI)
C120	ECFR1E104ZFY	25V 0.1U
C121	ECKT1H103ZF	50V 0.01U
C201, 202	ECKT1H223ZF	50V 0.022U
C203	RCBS1H2R2JCY	50V 2.2P
C204	ECKT1H223ZF	50V 0.022U
C205	ECBT1H102KB5	50V 0.001U
C206	RCBS1H120JCY	50V 12P
C208, 209	ECKT1H103ZF	50V 0.01U
C210	ECEA0JK330B	6.3V 33U
C211	ECKT1H103ZF	50V 0.01U
C212	ECEA1HKR47B	50V 0.47U
C213	ECEA0JK330B	6.3V 33U
C214	ECKT1H223ZF	50V 0.022U
C215	ECFTD223KXL	25V 0.022U
C301	ECFTD332KXL	25V 3300P
C302	ECKT1H103ZF	50V 0.01U
C303	ECEA1AU101B	10V 100U
C304	ECFR1E104ZFY	25V 0.1U
C306	ECEA1CK100B	16V 10U
C307, 308	ECQB1H153JZ3	50V 0.015U (EG, EI)
C307, 308	ECQB1H153JZ3	50V 0.015U (G, GN)
C307, 308	ECQB1H223JZ3	50V 0.022U (PX)
C309	ECEA1HKR22B	50V 0.22U
C310	ECEA1HKR47B	50V 0.47U
C311	ECEA1HKR22B	50V 0.22U
C312	ECKT1H223ZF	50V 0.022U
C313	ECQP1391JZ3	100V 390P (EG, EI)
C313	ECQP1391JZ3	100V 390P (G, PX)
C313	ECEA1HPX3R3B	50V 3.3U (GN)
C314	ECQM1H223KV3	50V 0.022U
C315, 316	ECEA1HPX3R3B	50V 3.3U
C317, 318	ECFTD332KXL	25V 3300P
C319	ECEA1HPX3R3B	50V 3.3U
C322, 323	ECBT1H102KB5	50V 0.001U
C324	ECKT1H471KB	50V 470P (EG, EI)
C701-704	ECKT1H103ZF	50V 0.01U
C705	ECEA1EU102E	25V 1000U

Ref. No.	Part No.	Values & Remarks
C706	ECEA1CU222E	16V 2200U
C707	ECEA1CU221B	16V 220U
C708	ECEA1VU101B	35V 100U
C709	ECEA1VK100B	35V 10U
C710, 711	ECKT1H103ZF	50V 0.01U
C712	ECEA1VK3R3B	35V 3.3U
C713	ECEA1VU101B	35V 100U
C715-718	ECKT1H103ZF	50V 0.01U
C719	ECEA1CK100B	16V 10U
C720	ECFR1E104ZFY	25V 0.1U
C901	ECEA0JU471B	6.3V 470U
C902	ECBT1E103ZF5	25V 0.01U
C903, 904	RCBS1H150JCY	50V 15P
C905	ECKT1H103ZF	50V 0.01U
C906	ECEA25M4R7RB	25V 4.7U
C907	ECEA1HKR47B	50V 0.47U
C908	ECFTD223KXL	25V 0.022U
C910, 911	ECKT1H103ZF	50V 0.01U
C914	ECKT1H103ZF	50V 0.01U
C915, 916	ECEA0JU102B	6.3V 1000U
C918	ECEA1CK100B	16V 10U
C919	ECEA1VK3R3B	35V 3.3U
C920	ECBT1H102KB5	50V 1000P (G, GN, PX)
C921	ECEA0JU101B	6.3V 100U
C922-927	RCBS1H101KBY	50V 100P

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A2

Service Manual

Supplement

Tuner

ST-G460
ST-G460L

Color

(K)...Black Type

Please file and use this supplement manual together with the service manual for Model No. ST-G460, Order No. AD8906195C1 (P, PC areas), or AD8906183C8 (EG, Ei, G, GN, PX areas) and ST-G460L, Order No. AD8905129C8 (E, E5, EB, EF areas).

Area

Country Code	Area	Color
(P)	U.S.A	(K)
(PC)	Canada	(K)
(EG)	F.R. Germany	(K)
(Ei)	Italy	(K)
(G)	Third Region	(K)
(GN)	Oceania	(K)
(PX)	Far East-PX and Europe PX	(K)
(E), (E5)	Continental Europe	(K)
(EB)	Great Britain	(K)
(EF)	France	(K)

Note:

- The purpose of this supplement is to correct errors in the "Replacement Parts List". Please correct your service manual as follows.

CORRECTION

■ PEPLACEMENT PARTS LIST

ST-G460 (Page 20 of service manual.)

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	Original	**New**		
CABINET AND CHASSIS				
16	RGK0090B-K	**RFKNTG460EGK**	GRILL	
23	RYP0122	**RFKGTG460P-K**	FRONT PANEL	(P, PC) areas
23	RYP0121	**RFKGTG460EGK**	FRONT PANEL	(EG, Ei, G, GN, PX) areas

ST-G460L (Page 22 of service manual.)

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	Original	**New**		
CABINET AND CHASSIS				
16	RGK0090B-K	**RFKNTG460EGK**	FRONT GRILL	
23	RYP0096	**RFKGTG460LEK**	FRONT PANEL	

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